

Caprellid Fauna (Amphipoda: Caprellidae) of Goheung Peninsula, Korea

Kyung-Sook Lee* and Soon-Sang Hong

Department of Life Science, College of Advanced Sciences, Dankook University, Cheonan 330-714, Korea

ABSTRACT

Seventeen caprellid species are reported from adjacent waters, of the Goheung Peninsula, Jeollanam-do in June, 2008. Among them *Paracaprella crassa* Mayer, 1903 is newly added to the Korean fauna. We described this species with illustrations and mentioned some differences from the original description and subsequent redescrptions. As a result, Korean caprellid fauna consists of 34 species in 6 genera.

Key words: *Paracaprella*, Caprellidae, Amphipoda, Goheung Peninsula, Korea

INTRODUCTION

Since Mayer (1903)'s report on the Korean caprellids, a total of 33 species of 5 genera in the family Caprellidae have been reported from South Korea (Kim and Lee, 1975, 1978; Lee and Kim, 1980; Lee, 1986, 1988; Lee and Lee, 1993, 1996; Lee and Eun, 2002; Kim et al., 2005; Lee and Hong, 2008). In this study, we collected the specimens from the various biofoulings in the subtidal zone, at the depth 2-9 m, in the adjacent waters around the Goheung Peninsula, Jeollanam-do province on 22-25 June, 2008. As a result, we confirmed 34 caprellid species including *Paracaprella crassa* Mayer, 1903, a newly recorded species from Korean waters.

MATERIALS AND METHODS

We collected specimens from several islands and a port adjacent to Goheung peninsula, Jeollanam-do (Fig. 1) by a hand net with fine mesh, SCUBA diving and light trap from 22-25 June 2008. The specimens were fixed in 80% ethyl alcohol and dissected in mixed solution (mainly glycerin with some lactic acid added lignin pink) on Cobb's aluminium hollow slide. Drawings and measurements were performed with the aid of a drawing tube for the identification of the specimens. The authors referred to Mayer (1903), Vassilenko (1974), Arimoto (1976, 1980), Guerra-García (2002, 2006), Guerra-García and Takeuchi (2004), Guerra-García et al. (2006), Heard et al. (2004), Martin et al. (2005), and McCain (1965, 1968) for identifying the specimens. All specimens examined in this study are deposited in the Department of Life Science, College of Advanced Sciences,

Dankook University.

SYSTEMATIC ACCOUNTS

The following systematic accounts include the caprellid species which are identified in this study. The genus and species marked (*) are newly known from Korea.

Order Amphipoda Latreille, 1816
Suborder Caprelliida Leach, 1814
Family Caprellidae Leach, 1814
Subfamily Caprellinae Leach, 1814
Genus *Caprella* Lamarck, 1801

1. *Caprella acanthogaster* Mayer, 1890

Material examined. 1 ♂, Hangdong Port, 22 Jun. 2008 (Y.H. Kim), by light trap; 15 ♂♂, 8 ♀♀, Oemaemuldo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 6 m in depth; 4 ♂♂, 3 ♀♀, 1 juv., Gilmado Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh; 1 ♀, Haehado Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 7 m in depth.

Distribution. Korea; China, Japan, Russia (Vladivostok, Sachalin), and South America.

2. *Caprella algaceus* Vassilenko, 1967

Material examined. 2 ♂♂, Kkosari Is., 23 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh; 4 ♂♂, 2 juv., Araetdonbae Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 5 m depth; 1 ♂, Jakeundombae Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh; 1 ♀, 1 juv., Jinjioedo Is., 24 Jun. 2008 (Y.H. Kim), by SCUBA diving from 6 m depth.

*To whom correspondence should be addressed
Tel: 82-41-550-3449, Fax: 82-41-550-3440
E-mail: kslee@dankook.ac.kr

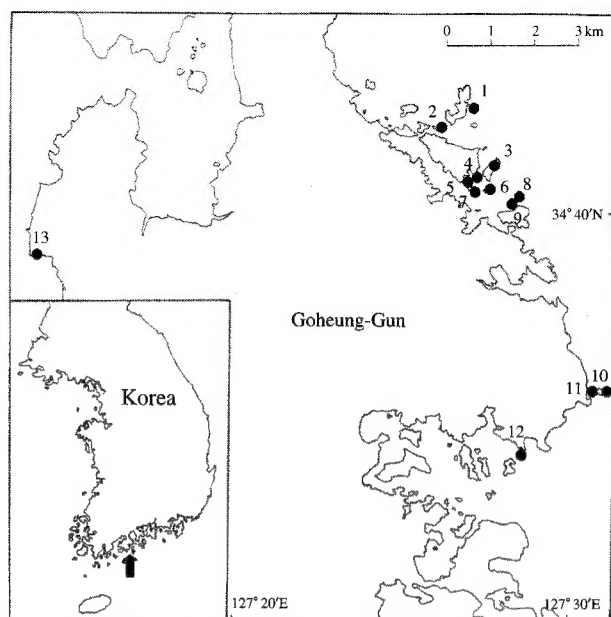


Fig. 1. A map of collecting sites. 1, Jinjioedo Is. (34° 42'36"N, 127° 27'08"E); 2, Mideokdo Is. (34° 42'31"N, 127° 25'26"E); 3, Haehado Is. (34° 41'10.8"N, 127° 27'55"E); 4, Gilmado Is. (34° 40'51"N, 127° 27'25"E); 5, Jakeundombae Is. (34° 40'35"N, 127° 26'33"E); 6, Araetdonbae Is. (34° 40'33"N, 127° 27'31"E); 7, Witdombae Is. (34° 40'40"N, 127° 26'58"E); 8, Keoldo Is. (34° 40'36"N, 127° 28'29"E); 9, Kkosari Is. (34° 40'20"N, 127° 28'17"E); 10, Oemaemuldo Is. (34° 35'43"N, 127° 30'54"E); 11, Naemaemuldo Is. (34° 35'35"N, 127° 30'38"E); 12, Sooktaedo Is. (34° 34'06"N, 127° 28'27"E); 13, Hangdong Port. (34° 39'40"N, 127° 13'39"E).

Distribution. Korea; Possjet Bay.

3. *Caprella brevirostris* Mayer, 1903

Material examined. 11♂♂, 6♀♀, Oemaemuldo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 6 m in depth; 1♀, Gilmado Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh.

Distribution. Korea; China, Japan, and U.S.A. (California).

4. *Caprella californica* Stimpson, 1856

Material examined. 15♂♂, 10♀♀, Oemaemuldo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 6 m in depth; 1♂, Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth; 8♂♂, 4♀♀, Gilmado Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh; 1♂, 3♀♀, Mideokdo Is., 25 Jun. 2008 (Y.H. Kim) by a hand net with fine mesh.

Distribution. Korea (South Sea); Chile, Japan, South Africa, and U.S.A. (California).

5. *Caprella danilevskii* Czerniavsky, 1868

Material examined. 1♀, Naemaemuldo Is., 23 Jun. 2008 (Y.H. Kim), by SCUBA diving from 3 m in depth; 1♂, 1♀, Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth; 2♂♂, 1♀, Jinjioedo Is., 24 Jun. 2008 (Y.H. Kim), by SCUBA diving from 6 m depth; 1♀, Haehado Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 7 m in depth.

Distribution. Korea; Algeria, Bermuda, Black Sea, Brazil, Caribbean Sea, French, Italy, Japan, South Africa, and U.S.A. (Florida, Hawaii).

6. *Caprella decipiens* Mayer, 1890

Material examined. 6♂♂, 2♀♀, 2 juv., Gilmado Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh.

Distribution. Korea; Japan and Russia (Sachalin).

7. *Caprella equilibra* Say, 1818

Material examined. 1♂, 1♀, Gilmado Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh.

Distribution. Korea; Africa, Bermuda, Black Sea, Brazil, Chile, Columbia, Japan, Malaysia, Mediterranean, Mexico, New Zealand, Panama, and U.S.A. (Florida, North Carolina, Hawaii).

8. *Caprella gigantochir* Mayer, 1903

Material examined. 1♂, 1 juv., Hangdong Port, 22 Jun. 2008 (Y.H. Kim and S.S. Hong), by light trap.

Distribution. Korea; Japan.

9. *Caprella kominatoensis* Takeuchi, 1986

Material examined. 1♀, Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth.

Distribution. Korea; Japan.

10. *Caprella kroyeri* De Haan, 1849

Material examined. 1♂, 3♀♀, 1 juv., Hangdong Port, 22 Jun. 2008 (Y.H. Kim and S.S. Hong), by light trap.

Distribution. Korea; Japan and Russia (Vladivostok).

11. *Caprella penantis* Leach, 1814

Material examined. 4♂♂, 3♀♀, Oemaemuldo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 6 m in depth; 2♂♂, 2♀♀, Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth.

Kim and J.Y. Choi), by SCUBA diving from 9 m in depth; 1 ♂, Araetdonbae Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 3 m in depth; 5 ♂♂, 1 ♀, Gilmado Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh; 2 ♂♂, 3 ♀♀, Haehado Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 7 m in depth; 1 ♀, Jakeundombae Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh; many ♂♂, many ♀♀, Keoldo Is., 24 Jun. 2008 (Y.H. Kim), by a hand net with fine mesh.
Distribution. Korea; Cosmopolitan.

12. *Caprella scaura* Templeton, 1836

Material examined. 2 ♂♂, 1 ♀, Kkosari Is., 23 Jun. 2008 (K.S. Lee and S.S. Hong), by fine mesh hand-net; 3 ♂♂, 1 ♀, Naemaemuldo Is., 23 Jun. 2008 (Y.H. Kim), by SCUBA diving from 3 m in depth; 10 ♂♂, 5 ♀♀, Oemaemuldo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 6 m in depth; 1 ♂, Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth; 2 ♂♂, 1 juv., Araetdonbae Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 3 m in depth; 9 ♂♂, 4 ♀♀, 2 juvs., Haehado Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 7 m in depth; 36 ♂♂, 14 ♀♀, 16 juvs., Jakeundombae Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by fine hand-net mesh; 6 ♂♂, 11 ♀♀, 1 juv., Jinjioedo Is., 24 Jun. 2008 (Y.H. Kim), by SCUBA diving from 6 m depth; 1 ♂, Witdombae Is., 24 Jun. 2008 (Y.H. Kim), by fine hand-net mesh.
Distribution. Korea; Cosmopolitan.

13. *Caprella simia* Mayer, 1903

Material examined. 4 ♂♂, Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth; 6 ♂♂, Jakeundombae Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh; 4 ♂♂, Jinjioedo Is., 24 Jun. 2008 (Y.H. Kim), by SCUBA diving from 6 m depth; 4 ♀♀, Haehado Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 7 m in depth.
Distribution. Korea; Japan.

14. *Caprella subtilis* Mayer, 1903

Material examined. 1 ♀, Araetdonbae Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 3 m in depth.
Distribution. Korea (East Sea, Yellow Sea).

15. *Caprella tsugarensis* Utinomi, 1947

Material examined. 1 ♂, 2 ♀♀, Naemaemuldo Is., 23 Jun. 2008 (Y.H. Kim), by SCUBA diving from 3 m in depth; 1 ♂,

Oemaemuldo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 6 m in depth; 1 ♂, Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth.

Distribution. Korea; Japan.

16. *Caprella verrucosa* Boeck, 1871

Material examined. 3 ♂♂, 1 ♀, Oemaemuldo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 6 m in depth; 1 ♂, Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth; 2 ♂♂, 1 ♀, Haehado Is., 24 Jun. 2008 (J.Y. Choi), by SCUBA diving from 7 m in depth; 1 ♂, Gilmado Is., 24 Jun. 2008 (K.S. Lee and S.S. Hong), by a hand net with fine mesh.

Distribution. Korea; U.S.A. (California), and Japan.

Genus **Paracaprella* Mayer, 1890

17. **Paracaprella crassa* Mayer, 1903 (Figs. 2, 3)

Paracaprella crassa Mayer, 1903, p. 66, pl. 2, figs. 32-33, pl. 7, figs. 48-50; Arimoto, 1929, p. 122, pl. 1; Utinomi, 1947, p. 70; Utinomi, 1968, p. 285, fig. 4; Arimoto, 1970, p. 14; McCain, 1970, p. 58; Arimoto, 1976, p. 53, figs. 23-24.

Material examined. 1 ♂, 1 ♀, 1 juv., Sooktaedo Is., 23 Jun. 2008 (Y.H. Kim and J.Y. Choi), by SCUBA diving from 9 m in depth.

Description. *Adult male.* Body (Fig. 2A) length about 5.8 mm, slender and smooth. Surface of body smooth but covered with short setae sparsely at dorsal parts of pereonites 3 to 5. Length ratio of pereonites segments 1-7=0.19:0.60:1.00:0.90:0.83:0.30:0.23.

Head. Moderately large, but quite angular above, looking somewhat triangular in lateral view. Pereonite 2 distally raised knob on the end and bearing a strong forward-directed spine on the each side anteriorly, projection at base of gnathopod 2. Pereonites 3 and 4 (Fig. 2A, B) with 3 bluntly pointed teeth on ventro-lateral margins on both sides respectively; a pair of the first anterior tooth are clear, but second and third teeth relatively minute. Pereonite 5 smooth, and slender. Gills on pereonites 3 and 4: small and oval in form; length about 1/2 ratio as long as wide. Antenna 1, about 1/3 as long as body length, peduncle 3-jointed, rather plump flagellum 4-segmented, and have 5 aesthetascs. Antenna 2 (Fig. 2C), about 1/2 as long as antenna 1 with 2-jointed flagella; swimming setae absent. Mouth part typical in genus. Maxilliped (Fig. 2D), inner lobe with 3 long and 1 short setae apically; outer lobe 2-segmented, with 3 simple and 1 short setae on anterio-inner margin of 1st segment, 3 simple setae on distal margin of second segment. Maxilla 1 (Fig. 2E), outer lobe

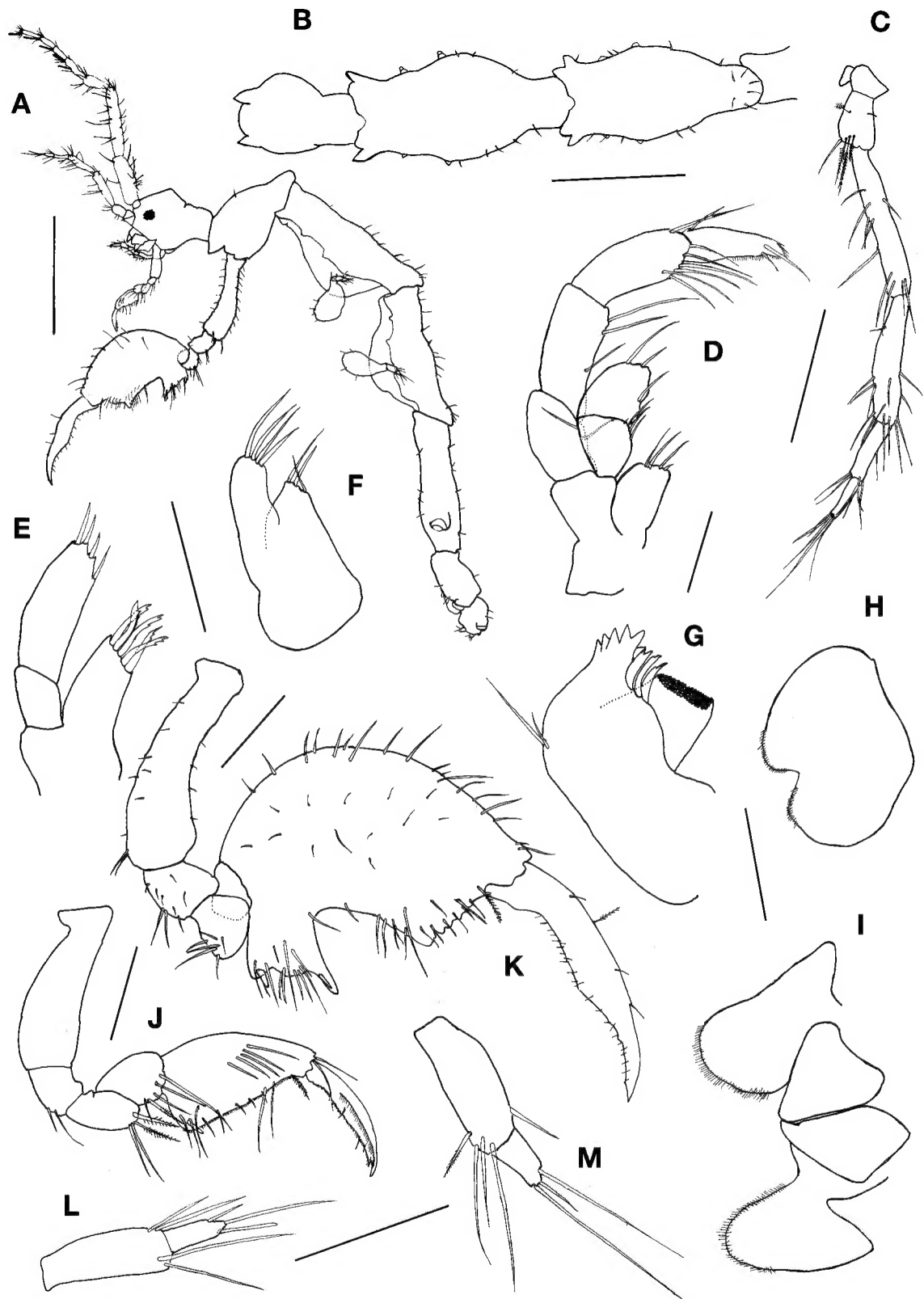


Fig. 2. *Paracaprella crassa* Mayer, 1903, male, 5.8 mm: A, habitus, lateral view; B, dorsal view; C, antenna 2; D, maxilliped; E, maxilla 1; F, maxilla 2; G, mandible; H, upper lip; I, lower lip; J, gnathopod 1; K, gnathopod 2; L, pereopod 3; M, pereopod 4. Scales bars=1 mm (A, B), 0.2 mm (C, K), 0.05 mm (D-I), 0.1 mm (J, L, M).

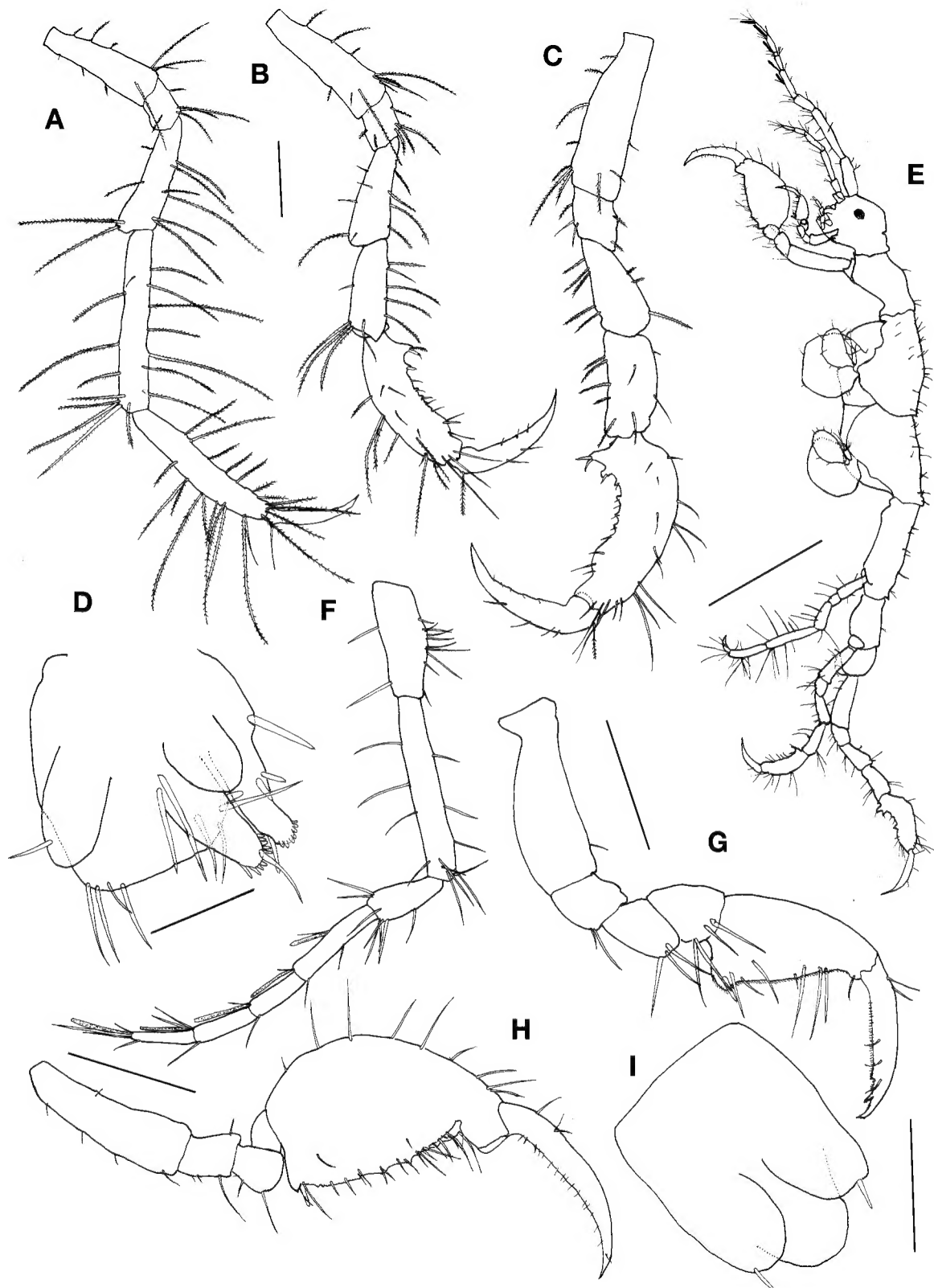


Fig. 3. *Paracaprella crassa* Mayer, 1903, A-D, male. A, pereopod 5; B, pereopod 6; C, pereopod 7; D, abdomen. E-I, female. E, habitus, lateral view; F, antenna 1; G, gnathopod 1; H, gnathopod 2; I, abdomen. Scale bars=0.2 mm (A-C, F-H), 0.05 mm (D, I), 1 mm (E).

with 5 strong bifurcate teeth; segment 1 of palp short, segment 2 with 4 simple setae apically. Maxilla 2 (Fig. 2F), both lobes with 3 and 4 long setae, respectively. Right mandible (Fig. 2G), divided 5 teeth; fork-like lacinia mobilis also separated 3 teeth, without setal row; mandibular palp absent; 2 simple setae on anterior-ventral margin. Upper lip (Fig. 2H), symmetrically bilobed, pubescent apically. Lower lip (Fig. 2I), outer lobe with some setules apically. Gnathopod 1 (Fig. 2J), length of propodus, about twice as long as wide; propodus with a ventro-proximal spine; inner margin of dactylus serrated. Gnathopod 2 (Fig. 2K), propodus peculiar, proximal angle of palm truncatedly projecting and bearing 2 teeth at its end, with 1 small spine at long projection, and with 1 spine of proximal margin; dactylus with convex inner surface, tapering proximally and distally, minutely setose.

Pereopods 3, 4 (Fig. 2L, 2M), rudimentary but clearly 2-segmented at base of gills, its 2nd segment smaller than 1st, and terminating into a few long setae. Pereopod 5 (Fig. 3A), little shorter than pereopod 6; 6-segmented, with some long bipinnate setae from basis to propodus; propodus without grasping spine. Pereopod 6 (Fig. 3B), little shorter than pereopod 7; pereopod 6 with some bipinnate setae from basis to carpus, palmar margin of propodus slightly concave, serrate medially and strongly 2 pointed proximally on each 1 grasping spine, and with 7 bipinnate setae on outer margin. Pereopod 7 (Fig. 3C), ventral margin of propodus more concave than one's of pereopod 6. Abdomen (Fig. 3D), a pair of appendages on ventral part with a pair of lobes, and a pair of appendage on dorsal part..

Immature female. Body (Fig. 3E) length about 3.9 mm.

Surface of body smooth but little short setae at dorsal parts of pereonites 3 to 5. Length ratio of pereonites segments 1-7=0.18 : 0.61 : 1.00 : 0.85 : 0.93 : 0.45 : 0.30. Head, moderately large, but quite angular above, looking somewhat triangular in lateral view. Pereonite 2 distally raised knob on the end and bearing a strong forward-directed spine on the each side anteriorly, projection at base of gnathopod 2. Pereonites 3 and 4 are smooth. Gills on pereonites 3 and 4, similar as male. Brood pouch immatured. Antenna 1 (Fig. 3F) and 2, similar as in male.

Gnathopod 1 (Fig. 3G), similar as male. Gnathopod 2 (Fig. 3H), propodus palmar edge slightly convex, about two times longer than its greatest breadth; propodus with 1 palmar spine at ventro-proximal part, with 7 simple and 1 bipinnate setae at anterior margin. Abdomen (Fig. 3I) with a pair of lobes.

Remarks. Our specimens coincide well with the Mayer's original description except for the ventro-lateral margin morphology of pereonite 3 in male. In Mayer (1903) and Arimoto (1976) the ventro-lateral margin of pereonite 3 in male is armed with three bluntly pointed teeth clearly. However, in the male specimen from Goheung the first of three tooth is

pointed and the rest two are relatively minute.

Distribution. Korea (South Sea); Japan, and China Sea

ACKNOWLEDGEMENTS

We are great thankful to Y.H. Kim and J.Y. Choi for collecting the specimens by SCUBA diving. The present research was conducted by the research fund of Dankook University in 2008.

REFERENCES

- Arimoto, I., 1976. Taxonomic Studies of caprellids (Crustacea, Amphipoda, Caprellidae) found in the Japanese and adjacent waters. Spec. Publ. Seto. Mar. Biol. Lab., 3: 1-229.
- Arimoto, I., 1980. Supplements to the Japanese caprellid fauna. I. Caprellids from the Korean Straits and adjacent waters. Spec. Publ. Seto. Mar. Biol. Lab., 15: 95-113.
- Guerra-García, J.M., 2002. Redescription of five rare caprellids (Crustacea: Amphipoda: Caprellidae) collected from Tanzanian coast. Helgo Mar. Res., 55: 221-231.
- Guerra-García, J.M., 2006. Caprellidae (Crustacea: Amphipoda) from the Great Barrier Reef and adjacent localities. Rec. Aus. Mus., 58(3): 417-458.
- Guerra-García, J.M. and I. Takeuchi, 2004. The Caprellidea (Crustacea: Amphipoda) from Tasmania. J. Nat. Hist., 38(8): 967-1044.
- Guerra-García, J.M., T. Krapp-Schickel and H.G. Müller, 2006. Caprellids from the Caribbean coast of Columbia, with description of three new species and a key for species identification. Bol. Invest. Mar. Cost., 35: 149-194.
- Heard, R.W., J.M. Foster and B.P. Thoma, 2004. Range extensions and review of the caprellid amphipods (Crustacea: Amphipoda: Caprellidae) from the shallow, costal waters from the Suwannee River, Florida, to port Aransas, Texas, with an Illustrated key. Gulf of Caribbean Res., 16(2): 161-175.
- Kim, H.S. and K.S. Lee, 1975. Faunal Studies on the genus *Caprella* (Crustacea, Amphipoda, Caprellidae) in Korea. Korean J. Zool., 18: 115-126.
- Kim, H.S. and K.S. Lee, 1978. Systematic study of Amphipoda (Crustacea) in Korea. III. Four unrecorded caprellids (Caprellidae) from South Korea. Korean J. Zool., 21: 1-7.
- Kim, Y.H., Y. Eun and K.S. Lee, 2005. Amphipods (Gammaridea and Caprellidea) Fauna of Jindo Island in Korea. Korean J. Syst. Zool., Spec., 5: 1-11.
- Lee, C.M. and K.S. Lee, 1996. A new species, *Caprella multibericulum* (Amphipoda, Caprellidae) from the East Sea in Korea. Korean J. Syst. Zool., 12: 281-287.
- Lee, K.S. and W. Kim, 1980. Report on a collection of marine animals from Gogunsan Islands. Rep. KACN, 18: 109-114.
- Lee, K.S. 1986. Systematic study of Amphipoda (Crustacea) in

- Korea. V. Description of one hitherto unrecorded species and two known species from Korean waters. Korean J. Zool., 29: 159-164.
- Lee, K.S., 1988. Fauna of Caprellidae (Amphipoda) of Cheju Island and its adjacent waters, Korea. Korean J. Syst. Zool., 36: 353-366.
- Lee, K.S. and C.M. Lee, 1993. Caprellids (Amphipoda, Caprellidae) from the East Sea in Korea. Korean J. Zool., Spec., 2: 97-106.
- Lee, K.S. and Y. Eun, 2002. A newly record species of *Caprella* (Crustacea, Amphipoda, Caprellidae) from Korea. Korean J. Syst. Zool., 18(2): 271-276.
- Lee, K.S. and S.S. Hong, 2008. *Caprella* Fauna (Amphipoda: Caprellidae) from off Yeonggwang Korea. Korean J. Syst. Zool., 24(2): 155-160.
- Martin, A., Y.J. Diaz and J.M. Guerra-García, 2005. Caprellids (Crustacea: Amphipoda: Caprellidae) from shallow waters of the Caribbean coast of Venezuela. Org. Divers. Evol. 5, Suppl., 10: 1-25.
- Mayer, P., 1903. Die Caprellidae der Siboga-Expedition. Siboga-Expedition, Monogr., 34: 1-160.
- McCain, J.C. 1965. The Caprellidae (Crustacea: Amphipoda) of Virginia. Chesapeake Science, 6(3): 190-196.
- McCain, J.C., 1968. The Caprellidae (Crustacea: Amphipoda) of the western North Atlantic. Bull. U.S. Nat. Mus., 278: 1-147.
- Utinomi, H., 1947. Caprellidae of Japan and adjacent waters. Seibutsu, Suppl., 1: 68-82.
- Vassilenko, S.V., 1967. Fauna of Caprellidae (Amphipoda) of the Possjet Bay (Sea of Japan) and some data on their ecology. Issledovanija Fauna Morei V (XIII), Biotzenozy Zaliva Possjet Japonskovo Morja, pp. 196-229.
- Vassilenko, S.V., 1974. Caprellids (skeleton shrimps) of the seas of USSR and adjacent waters. Dept. USSR. Zool. Inst. Acad. Hayk, USSR, 107: 1-288.

Received June 28, 2009
Accepted November 16, 2009